

**Commonwealth of Kentucky
Division for Air Quality**

PERMIT APPLICATION SUMMARY FORM

Completed by: Sreenivas Kesaraju

GENERAL INFORMATION:

| | |
|----------------------------|---|
| Name: | Superior Graphite Company |
| Address: | 4021 Calvin Drive, Hopkinsville, KY 42240 |
| Date application received: | December 15, 1997/March 24, 1998 |
| SIC/Source description: | 3292 |
| AFS(10-digit) Plant ID: | 21-047-00025 |
| Application log number: | 50261/50450 |
| Permit number: | V-03-040 |

APPLICATION TYPE/PERMIT ACTIVITY:

| | |
|---|--|
| <input checked="" type="checkbox"/> [X] Initial issuance | <input type="checkbox"/> [] General permit |
| <input checked="" type="checkbox"/> [X] Permit modification | <input type="checkbox"/> [] Conditional major |
| __Administrative | <input checked="" type="checkbox"/> [X] Title V |
| __Minor | <input type="checkbox"/> [] Synthetic minor |
| _X_Significant | <input type="checkbox"/> [] Operating |
| <input type="checkbox"/> [] Permit renewal | <input checked="" type="checkbox"/> [X] Construction/operating |

COMPLIANCE SUMMARY:

| | |
|--|---|
| <input type="checkbox"/> [] Source is out of compliance | <input type="checkbox"/> [] Compliance schedule included |
| <input type="checkbox"/> [] Compliance certification signed | |

APPLICABLE REQUIREMENTS LIST:

| | | |
|--|---|---|
| <input type="checkbox"/> [] NSR | <input type="checkbox"/> [] NSPS | <input checked="" type="checkbox"/> [X] SIP |
| <input checked="" type="checkbox"/> [X] PSD | <input type="checkbox"/> [] NESHAPS | <input type="checkbox"/> [] Other |
| <input type="checkbox"/> [] Netted out of PSD/NSR | <input type="checkbox"/> [] Not major modification per 401 KAR 51:017, 1(23)(b) or 51:052,1(14)(b) | |

MISCELLANEOUS:

- ☐ [] Acid rain source
- ☐ [] Source subject to 112(r)
- ☐ [] Source applied for federally enforceable emissions cap
- ☐ [] Source provided terms for alternative operating scenarios
- ☐ [] Source subject to a MACT standard
- ☐ [] Source requested case-by-case 112(g) or (j) determination
- ☐ [] Application proposes new control technology
- ☒ [X] Certified by responsible official
- ☐ [] Diagrams or drawings included
- ☐ [] Confidential business information (CBI) submitted in application
- ☐ [] Pollution Prevention Measures
- ☐ [] Area is non-attainment (list pollutants):

EMISSIONS SUMMARY:

| Pollutant | Actual (tpy) | Potential (tpy) |
|-------------------------------------|--------------|-----------------|
| PM/PM10 | 88.79 | 88.79 |
| SO ₂ | 418.93 | 418.93 |
| NO _x | 1.72 | 1.72 |
| CO | 81.56 | 81.56 |
| VOC | N/A | N/A |
| LEAD | 0.004 | 0.004 |
| HAPS (by CAS) | | |
| Hydrofluoric acid 7664-39-3 | 0.29 | 0.29 |
| Sulfuric acid Air Toxic, Not HAP | 2.45 | 2.45 |

Note: A Production increase has been granted with this permit and no information on actual emissions is available at this time. Therefore the actual emissions and potential emissions are listed as equal. The actual emissions could change from year to year based on the processing rates.

SOURCE PROCESS DESCRIPTION:

The Superior Graphite Company (Superior), Desulco Division, manufactures and processes high purity graphite (Desulco), synthetic graphite, natural graphite, and silicon carbide at its Hopkinsville, Kentucky plant. Desulco is a high purity carbon additive that is manufactured by removing sulfur from Calcined Petroleum coke in high temperature furnaces.

Synthetic graphite, which is graphite produced artificially by converting petroleum coke or other high-carbon materials to a graphite structure, and other natural graphites such as flake, crystalline and amorphous graphite, are also processed in the Desulco furnaces at the Hopkinsville plant.

The raw material is transferred into the Furnaces from the pre-heater. The sulfur is removed from raw material (Calcined Petroleum Coke) to produce high purity carbon additive. The flue gases contain N₂, CO, H₂S and other sulfur compounds along with particulate matter (unburned carbon and ash). Gases from each furnace are combined in a manifold for entry into a single afterburner that is fired with excess air to convert the H₂S to SO₂. Gases are cooled in the afterburner by excess air to 1200-1300 deg F. Then the gases pass through the Multiclone where big particulates are removed and then pass through ID fans to the scrubber via the Quench Reactor, where SO₂ is controlled.

Silicon carbide grain is manufactured by reacting high purity carbons with silica in the Desulco furnaces, mainly in furnaces 16-01 and 16-02, which vent out the baghouse. The silicon carbide grain produced is processed to produce silicon carbide powder; this process mainly consists of three basic operations: milling, leaching and drying.

EMISSION AND OPERATING CAPS DESCRIPTION:

1. The throughput and the hours of operation of furnaces 16-01 and 16-02 are restricted to net out of PSD review for SO₂ with the SO₂ emission reductions [106.65 TPY of SO₂ emissions reduction] being used to offset the increased SO₂ emissions at furnaces 16-03, 16-04 and 16-05.
2. The Ball Mills, emission points 06 through 09, have a reporting requirement to report the monthly particulate emissions from the Ball Mills on a quarterly basis to the Division's Paducah Regional Office to show non-applicability of PSD (The annual emissions on a rolling twelve (12) month period less than 15 TPY).

OPERATIONAL FLEXIBILITY: N/A

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.